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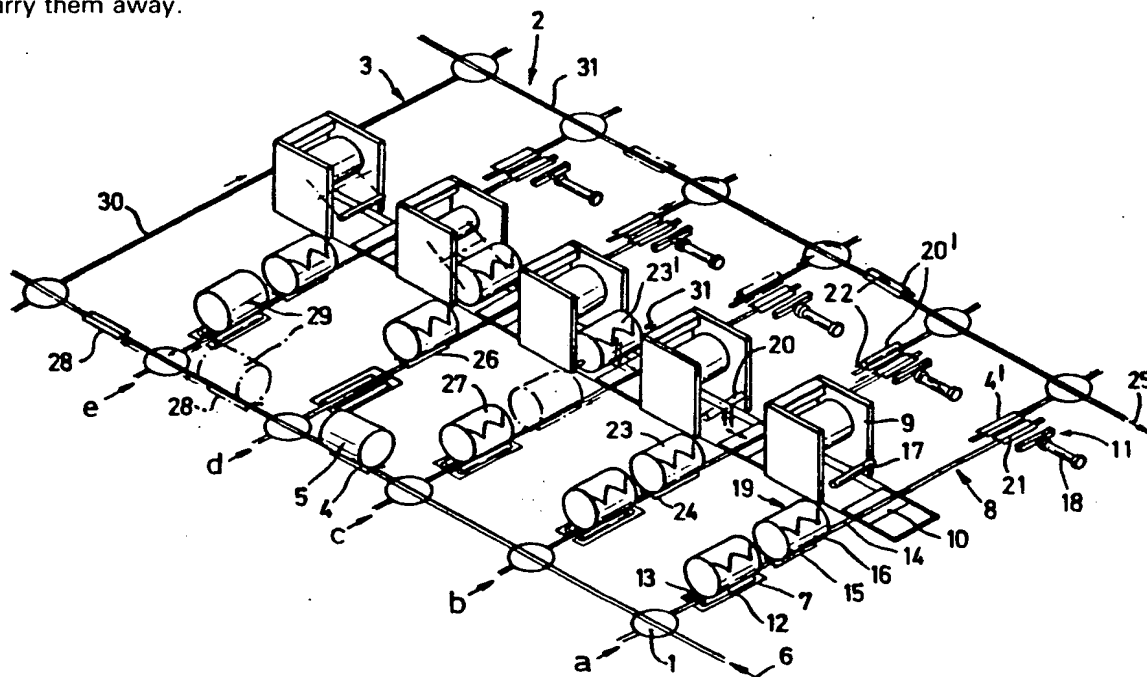
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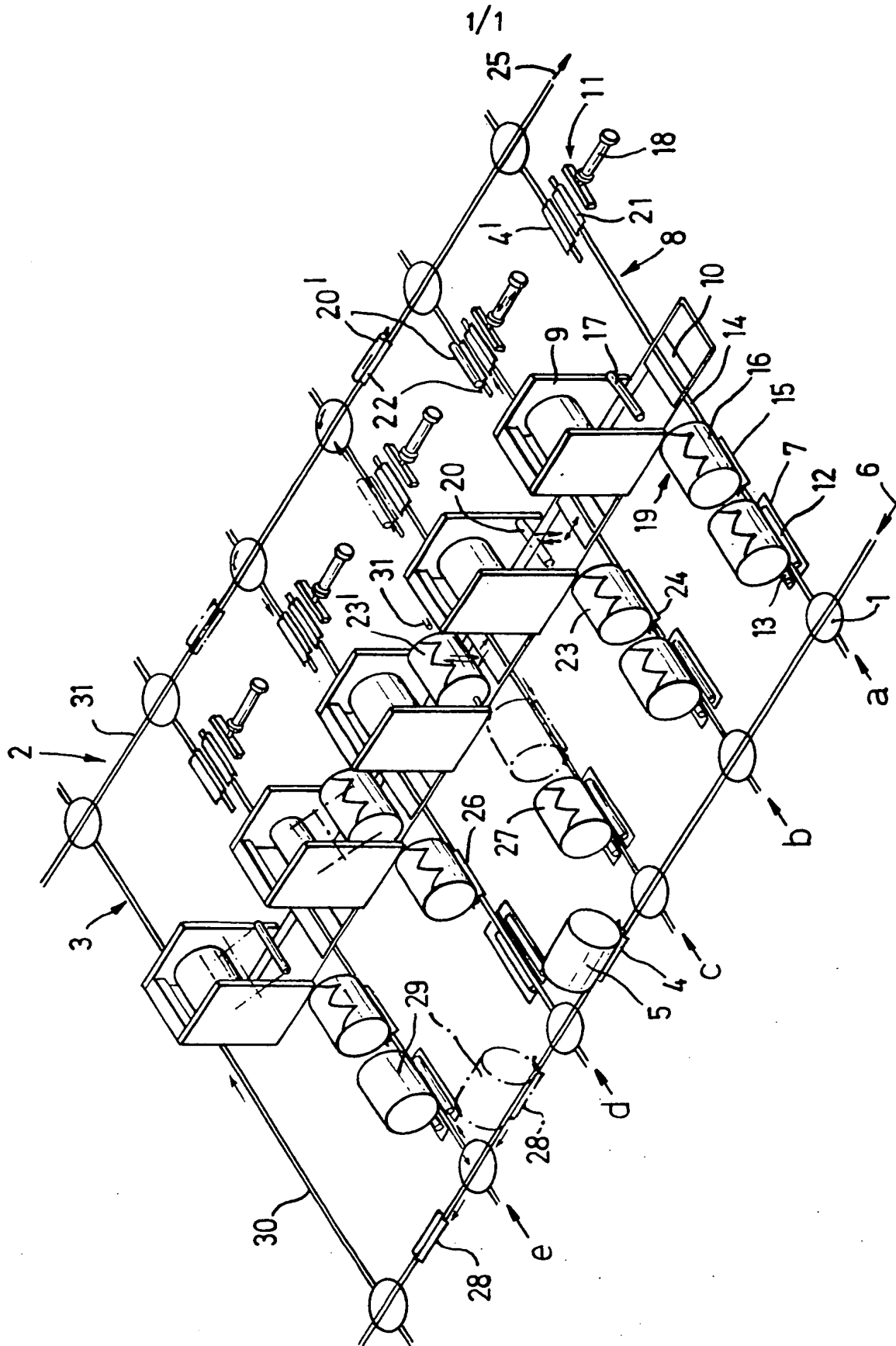
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## (54) Method for handling reels in a web-fed rotary printing press

(57) In a method for introducing a reel into a reel holder of a web-fed rotary printing press equipped with several reel holders (9) reels are brought, via a reel conveying system (2), onto a transfer station (7) in order to load and unload reels into and from the reel holders (9). Gluing points are prepared at this transfer station (7), which also acts as a storage point. A reel transfer system (8) picks up the reel and feeds it to the reel holders (9). The residual reels which arrive are conveyed by the reel transfer system (8) to a residual-reel unloading system (11), where the reel conveying system (2) is able to pick up the said reels and carry them away.



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## SPECIFICATION

### Method for handling reels in a web-fed rotary printing press

5 This invention relates to a method for introducing a reel into a reel holder of a web-fed rotary printing press equipped with several reel holders. wherein the reels are brought, by  
10 means of a known reel conveying system, from a reel storage area into a preparatory station arranged in front of the reel holders and are transferred from there into the reel holders, the residual reel which remains inside  
15 the reel holder after the operating cycle being conveyed subsequently to a residual-reel storage area.

Such methods for conveying reels towards and away from the reel holders of web-fed  
20 rotary printing presses are known. Issue No. 3 of "WIFAG-Information" dated February 1982 describes some variations in the method used for conveying the reels from the reel storage area to the reel holders and also mentions the  
25 need for reels which are designed for correspondingly large machines.

The classic method of conveying reels to the reel holder consists in bringing a reel which has been unpacked in the preparatory  
30 station, in front of the reel holder by means of a known conveying means, after which the reel is rolled between the arms of the reel holder. After alignment of the reel and the clamping mandrel of the arms, the central axis  
35 of the reel is clamped by the clamping mandrel. The reel is now raised by moving the reel-holder arms so that the reel can be freely rotated and so that the operator is able to prepare the gluing point on the leading end of  
40 the reel for automatic gluing to the trailing end of the old reel. In this respect, the gluing point of the new reel can only be prepared when the new reel is introduced into the reel holder, i.e. the operator is largely dependent on the  
45 operating speed of the plant. In order to avoid bottlenecks in the supply of reels, an operator is not allowed to supervise the operation of several reel holders. In addition, he is operating  
50 in noisy and dangerous conditions, close to the reel holders.

Furthermore, a method is known, in which a reel preparation point is created within the conveying system used to bring the reels from the storage area to the reel holder. However,  
55 if several reel holders are to be supplied via this conveying system, this arrangement can lead to bottlenecks since both the conveying system and the operator are dependent on the operating speed of the web-processing printing  
60 press.

The object of the present invention is to provide a method for conveying reels into the reel holders and for transporting the residual  
65 reels away from the reel holders, wherein the preparation of the reel to be subsequently

processed, in particularly the preparation of its gluing point, can be performed, on the one hand, practically independently of the operating speed of the machine plant and, on the other hand, away from the noise and danger zones of the reel holders.

70 According to the invention, this object is achieved in that the reel is picked up, from the preparatory station expanded to form a transfer station, by a reel transfer system operating independently of the reel conveying  
75 system and bringing the reel to a pushing/raising platform unit which, in turn, introduces the reel into the reel holder, the transfer station also acting as a storage point, and in that the same reel transfer system conveys  
80 the residual reel to a residual-reel unloading system.

Using the plant provided for this method, it  
85 is possible to automate the individual steps of the reel loading and unloading operations so that loading and unloading of reels or residual reels in the reel holder can be performed fully automatically.

90 The reel handling method is explained in more detail by reference to the accompanying drawing which is a simplified spatial illustration to show schematically an advantageous arrangement of reel holders underneath a web-fed rotary press with several printing units.

This arrangement has five stations a, b, c, d and e for loading and unloading reels. Each of the stations a, b, c, d, e can be connected, by means of a revolving switching device 1,  
100 to the reel conveying system 2 consisting of rails 3 running around the stations a, b, c, d, e and carriages 4 which can be driven and travel on these rails. The carriage 4 brings the reels 5 from the storage area (arrow 6) and conveys them, via the revolving switching device 1, into one of the stations a, b, c, d, e.

Each of the stations a, b, c, d, e has a transfer station 7, a reel transfer system 8, a reel holder 9, a pushing and raising platform unit 10 and a residual-reel unloading system  
110 11.

The transfer station 7 consists of two rollers 12 and 13, the axes of which lie parallel with the delivered reel and which can be  
115 raised; one of these rollers can be driven so that the reel resting on it can be slightly turned.

The reel transfer system 8 consists of rails 14 and carriages 15 which can be driven so  
120 as to travel on these rails.

The reel holder 9 can accommodate two reels and enables the webs to be glued together in a known manner. The pushing and raising platform 10 brings the reel 16 deposited on the carriage 15 underneath the reel holder arms 16 and raises the reel 16 to the necessary height. In the same manner, the residual reel 17 is removed from the reel holder 9 and conveyed to the residual-reel unloading  
130 system 11.

The residual-reel unloading system 11 consists of a pushing mechanism 18 which transfers the residual reel 17 from the carriage 21, which belongs to the reel transfer system 8, onto the carriage 4 of the reel conveying system 2. An additional storage point 19 is arranged between the transfer station 7 and the pushing and raising unit 10.

Before printing begins, all the reels are prepared. This means, for each station a, b, c, d, e, that two reels are located inside the reel holder 9, one reel being provided with a gluing point. A reel 16 with a prepared gluing point is loaded onto the carriage 15 which is located at the storage point 19. A reel, which is also provided with a gluing point, is located on the raised rollers 12 and 13 of the transfer station 7. The operating cycle, as from this point, is now described.

When the first reel inside the reel holder 9 is almost used up, the leading end of the second reel is automatically glued to the trailing end of the first reel. The reel holder arms are turned through 180°. The residual reel 17 is located in the region of the pushing and raising platform 10, as shown at station a. The carriage 21 moves onto the pushing/raising platform 10. The pushing/raising platform 10 travels, together with the carriage 21, underneath the axis of the residual reel 20, is raised and picks up the residual reel 20. The pushing and raising platform 10 is lowered and travels back into the starting position, and the carriage 21 travels together with the residual reel 20, to the residual-reel unloading system 11, where the pushing mechanism 18 transfers the residual reel 20 from the carriage 21 onto the carriage 22, as shown at station b.

The reel 23, which has a gluing point and waits for the carriage 24 at the storage point 19, now travels up in front of the pushing and raising platform 10 which, in turn, moves underneath the reel holder arms and is raised until the clamping mandrel of the reel holder arms are able to clamp the reel 23. Raising of the pushing and raising platform 10 can be monitored, for example, by means of photo-electric barriers 31. The pushing and raising platform is subsequently lowered and travels back into the starting position. At the same time, the carriage 21 moves, together with the residual reel 20, via the revolving switching device 24, onto the reel conveying system 2 and from there into a residual-reel storage area (arrow 25), as shown at station c.

The carriage 26 travels from the pushing and raising platform 10, underneath the reel 27, which is located on the raised rollers 12, 13 of the transfer point 7 and which at the same time is aligned in the axial direction by the latter, picks up this reel 27 which is provided with a gluing point and moves onto the storage point 19, as shown at station d.

The carriage 28 brings a new reel 29 from

the storage area and moves, via the revolving switching device 1, onto the transfer station 7. Here the reel is raised and axially aligned and the empty carriage 28 moves back onto the rails 3 of the reel conveying system 2 and travels, via a rail section 30, to the rail section 31, where it enters a residual-reel unloading system 11 in order to pick up an awaiting residual reel. This sequence is illustrated at station e.

The operator can now prepare the gluing point of the new reel 29 at the transfer station 7 and, on account of the supply reels at the transfer station 7, which also serves as a storage point, and the storage point 19 itself, is not entirely bound by the operating speed of the printing plant which, as is known, does not convey the reels at uniform intervals.

This sequence, of which the individual steps for the sake of clarity, were divided up into the various stations a, b, c, d, e, is performed continuously in each of the stations a, b, c, d, e, in the same manner.

In the case of fully automatic operation of the plant described, monitoring elements must be incorporated in a known manner, it being possible, for example, to monitor, on a panel, the sequence of operations controlled by a programmable control device.

Since the reel transfer system 8 operates independently of the reel conveying system 2, such a plant can also be readily incorporated into an already existing reel conveying system.

## 100 CLAIMS

1. A method for introducing a reel into a reel holder of a web-fed rotary printing press equipped with several reel holders, the reels being brought, by means of a known reel conveying system, from a reel storage area into a preparatory station arranged in front of the reel holders and being transferred from there into the reel holders, and the residual reel remaining inside the reel holder after the operating cycle being conveyed subsequently to a residual-reel storage area, characterised in that the reel is picked up, from the preparatory station expanded to form a transfer station, by a reel transfer system operating independently of the reel conveying system and bringing the reel to a pushing and raising platform unit which, in turn, introduces the reel into the reel holder, the transfer station also acting as a storage point, and in that the same reel transfer system conveys the residual reel to a residual-reel unloading system.

2. A method according to claim 1, characterised in that, inside the transfer station, the gluing point of the reel is prepared so that the trailing end of the old reel can be automatically glued to the leading edge of the new reel inside the reel holder.

3. A method according to claim 1, characterised in that the residual-reel disposal system transfers the residual reels to a known

reel conveying system which brings the residual reels to a collection point.

4. A method according to any of claims 1 to 3, characterised in that at least one additional

5 storage point is arranged between the transfer station, which also acts as a storage point, and the pushing and raising platform unit.

10 5. A method according to any of claims 1 to 4, characterised in that the individual steps of the reel loading and unloading operations are automatically controlled.

15 6. A method according to any of claims 1 to 4, characterised in that the entire reel handling operation is performed automatically and monitored by a control device.

20 7. A method for introducing a reel into a reel holder of a web-fed rotary press substantially as hereinbefore described with reference to the accompanying drawings.

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